

## CHAPTER 1

### INTRODUCTION

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#### 1-1. Purpose

The purpose of this technical manual (TM) is to provide guidance for facility managers and engineers in applying the principles of limited vulnerability design (LVD) to the utility systems for command, control, communications, computer, intelligence, surveillance, and reconnaissance (C4ISR) facilities. It will also provide generic guidance to agencies responsible for the planning, design, and installation of such systems in C4ISR facilities. The utility systems for C4ISR facilities include those providing heating, cooling, ventilation, water, sanitation, and electrical service to the mission-critical loads within the facilities as well as their associated control systems.

#### 1-2. Scope

The LVD model is a set of principles to apply in designing a C4ISR facility that is compartmentalized and provides multiple service pathways for all utilities to the critical load as protection against an internal terrorist attack intended to interrupt the mission.

a. This TM includes an example facility floor plan, which is the basis for discussion of the application of the LVD principles to the utility systems. The primary focus of this TM is the mechanical and electrical utility systems and their controls.

b. This TM addresses utility system topics only as they are affected by or require different consideration due to the application of the LVD concept. Other aspects of utility system design that are addressed by industry standards, other TMs, or United States Department of Defense (DoD) documents are not repeated in this TM. Similarly, examples include only discussion of those aspects of system design considered relevant to LVD and may not show other features required by industry codes and standards.

#### 1-3. References

Appendix A, References, contains a complete list of the sources cited in this TM. Planning, design, installation, and commissioning of utility systems should always be based on the most current relevant edition of the standards listed as references. Where the recommendations of this TM and the referenced standards differ, the more stringent requirement should be followed.

#### 1-4. Currency

The LVD concept is in part intended to isolate and prevent the spread of chemical, biological, or radiological (CBR) and other agents for which detection and mitigation technology is rapidly evolving. This TM discusses agent detection and mitigation in general but does not recommend specific sensor types or filtration techniques because the technology is expected to advance faster than this TM will be updated. It is also possible that additional detection technology will be developed for threats such as explosives, for which no practical wide-area detection method exists today. Equipment and systems intended for threat detection and response should always be selected from the most current proven technologies.